Computer-based Curriculum Analysis:

A Customized Approach Using External Standards and the UMLS

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The AADS (American Association of Dental Schools) Curriculum Database Consortium is now Beta testing its first software product, known as CATs, which is an acronym for Curriculum Analysis Tools. The product has satisfied the principle requirements for: user customization, cross-referencing to external standards, and content searching by keyword using the UMLS. The product provides an intuitive method of curriculum analysis with powerful tools for viewing and interpreting the results.

THE CONSORTIUM'S GOALS

The consortium now represents over fifty Dental Schools and Allied Dental Programs, who share a common interest in curriculum analysis. However, since each school works with a different infrastructure, and uses different resources and methods to accomplish their goals, the development team needed to deliver a software tool which could adapt to the special circumstances of each school while accurately and comprehensively representing their curriculum. The software needed to be able to cross-reference the curriculum to external standards while the analysis needed to be scalable, performing simple analysis on minimal data and detailed analysis on comprehensive data.

CATs DESIGN

The CATs development team selected the FoxPRO™ programming language, based upon the promise of Macintosh platform support, and the PC for initial development. CATs is a layered product with each layer establishing the data environment for the next. Excluding the security system, the top layer is Customization which provides the school with the ability to configure CATs for the needs and resources of their own institution. The school's curriculum committee will select from the menu of analytical tools which will define the data to be entered. At this level the institution may choose to use faculty data or student gathered data. In addition, the data may be cross referenced to accreditation standards or other external databases, institutional goals, discipline integration, and the learning behaviors involved. Whether the institution chooses to use faculty or student gathered data, or both, the content of each course is described in a controlled taxonomy drawn from the National Library of Medicine's Unified Med-

ical Language System (UMLS) and enhanced by the consortium with over 8,000 dental terms.

Customization Layer: The Customization layer allows the tools and analysis methods to be tailored to suit the institution. Once CATs is customized features not selected are invisible to the users.

Set-up Layer: The Set-up Layer defines the terminology, resources, and databases to be used in the analysis of the curriculum. The data entered in this layer; academic terms, faculty, course names, etc. is then reused through out the data collection layer.

Data Collection Layer: Data on individual course content is collected from either the provider/faculty or recipient/student viewpoint or both. The course outline contains twelve standard items from which a school may choose. The student data is a session by session description of the course which may include format, media, study time estimates and keywords. Both the class sessions and course outlines are designed to describe course content using the UMLS controlled vocabulary.

Data Analysis: CATs provides the users with a powerful suite of data analysis tools. Two of the most important are the Browse and LookUp commands. The Browse tool allows a user to iteratively apply data filters to isolate a subset of the curriculum and then orient and, if necessary, re-orient the data presentation to develop a thorough understanding of the data subset. The LookUp command allows the user to look for occurrences of concepts and keyword across any subset of the curriculum.

RESULTS

Feedback from the consortium Alpha and Beta testers has been very positive. We have restructured the CATs keyword database to follow changes made to the UMLS and are continuing to add new keywords.

IMPLICATIONS

The general approach to curriculum analysis in CATs can be applied to virtually any curriculum, however, the use of the UMLS database and its associated taxonomy would be immediately beneficial to the analysis of curriculum in other health professions.